

MULTIMEDIA

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Multimedia is one among the new media devised and developed for information communication. Multimedia is becoming so pervasive and penetrating that it provides an opportunity for study afresh some of the issues concerned with multimedia and make the information professionals to give attention towards these developments.

Multimedia is a device which includes everything and is not a book. i.e. multimedia incorporates many components and these components can be accessed simultaneously.

What is Multimedia ?

Multimedia is the convergence of computers and communication technology and is a system which integrates text voice and voice processing, film pictures etc. As the name implies MM lets out to use several types of media like sound, graphics, animation, texts etc.¹

The term Multimedia is formed by the combination of two words Multi and Medium. Multi refers to many i.e. more than two and media is the plural form of medium.²

At the UIMS workshop Portugal, June 1990 MM is defined as³

a) MM is concerned with both input and output including their combination called interaction.

b) For output MM is concerned with Multiple streams operating in parallel (e.g. reactor graphics, roster graphics, text, video, sound etc.). Stream may not be the best word channel, track or modes are alternatives.

c) For input MM is concerned with simultaneously input events generated by one or several different devices e.g. key board, spoken commands, dataglove, data suite, finger mouse, touch screen, eye tracker, musical instruments etc. all being used parallel.

d) On input it is concerned with the composition of higher level input tokens in terms of primitive events. e.g. gesture input could be derived from a set of data glove positions.

Now MM has become the latest cultural phenomena as the computing and communication technologies are the forefront of the MM revolution. The thrust for MM was mainly due to

have a single source for basic information on digital media. MM is a systematic network of communication, electronics & computer technology.

CONSTITUTENTS OF MM

A stand alone MM system will almost always include the following hardware configuration :

1. Computer with processor and RAM
2. Display Unit (TV or monitor)
3. Means of user interactive (devices such as a remote control device, mouse, joystick, keyboard etc.)
4. Hard disc with at least 120 MB
5. CD-Drive
6. Sound Synthesisism - Audio amplifier/speaker/ digital audio
7. Headphone
8. Windows 3.1 or later

In a multimedia system every file containing information in our computer is an 'object'. The object can consists of text files, images, wave form audio files, digital video animation sequence, sound tracks, or any application software program installed in the computer. The main feature of MM is 'links' i.e. any object in the computer's memory can be linked to each other. The MM object can be presented as below: (See diagram No.1.)



Let us have an idea of these objects⁴.

1. **Pictures** : This include slides, illustrations, clip arts and photographs. Slidebanks allows to have instant access to thousands of slides having multiple links whenever we want to see exactly within a second unlike in a predetermined order dictated by a slide tray. Clip arts contain object of interest to businessmen as well as educators e.g. Clip art library that comes with Micrografix Draw !

has the picture of Abraham Lincoln. Photographs also can become the object of a link. It can be B/W or colour. Like slides we have instant access to any photographic image.

- 2. Audio :** Audio is a major component of Multimedia. It is interesting and amazing how much an audio sound track can do for a picture object. Audio can make it seen like still images.

The National Geographic's Society's Wales videodisc makes excellent use of sound under stills to demonstrate the feeding habits of hump back wales.

Using a waveform audio digitizer board and a microphone we can record instructional commentary and link it to a slide. An effective technique is to include ambient sound in the background which adds realism.

- 3. Music :** Unlike audio the sound of musical instrument is also a component of MM. This is added using Musical Instrument Digital Interface (MIDI). MIDI is the most economical way to add music to the system. Low cost compact MIDI synthesizer are now available that connect either to MIDI board inside the computer or the computer's serial port.

- 4. Video :** There are three types of video presentation technology. These are :

1. Videotape 2. Videodisc 3. Digital Video

Videotapes have the limitation of slow access. Usually for faster access videodiscs and digital videos are used. Videodisc provide fast access to any frame of video. In addition to string motion sequences videodiscs also have a stereo sound track; the two tracks can be played together to create a stereo effect. The only disadvantage is that it is only read only medium. Digital video has overcome this problem. It is also possible to link direct video feeds.

- 5. Animation :** Animations are like video in that they contain motion but instead of shooting video of real objects in motion, animation sequences use computers to generate animate objects digitally. Now many animation software like Auto desk animator, 3D studio lets the movements of objects dynamically.

- 6. Software :** In an object oriented presentation system one can link other software applications that resides on the computer/network.

- 7. Text :** Text is the basic for word processing program and is the fundamental information

used in all MM.

The MM system is thus intended to address a broad range of needs in different discipline. The MM system gives the ability to

1. Handle live data remotely
2. Handle stored data remotely
3. Handle both live and stored data simultaneously
4. Handle multiple kinds of data simultaneously
5. Handle new kinds of devices and media types.

Origin of MM :

Origin of MM is frequently connected with the emergence of the term hypertext (HT)⁵. The HT concepts was traced back to the 2nd World War. It was Vannever Bush in 1945 who visioned the multiple access to a system and designed a system called 'Memex'. 'Memex as described by Bush is a device in which one stores all his books, records and communications, and which is mechanised so that it can be consulted with exceeding speed and flexibility. It is an enlarged supplements to his memory'. Memex would additionally be an associative device, so that related items could be easily located through the association of 'links'. After 15 years Doug Englebart implemented and designed a system called NILES which had interactive multi person editing and branching of different files and texts having searching facility.

It was in 1965 Ted Nelson who understood the concept of Bush and designed a system called Hypertext. In the late 1960's. Ted Nelso and Andries Van Dam collaborated at Brown University to develop a hypertext editing system on an IBM 360. A fourth generation system developed at Brown, Intermedia, has continued this research and includes animation and video tools.

In 1967 Nicholas Negroponte formed the Architecture Machine Group in the Architecture Dept. at M.I.T. It was when the MIT Media laboratory was established to develop multimedia system. Multimedia is thus an extension of Hypertext/Hypermedia. The difference between HT and MM is that HT system allows to link together only textual materials where as MM provides access to heterogeneous blocks of information.

After 1985 MIT Media Lab took nearly 10 MM Research projects. The other MM research groups commercially established are 1. Olivetti Research Lab 2. Apple Computer Multimedia Lab

The real MM systems are dreams of the professionals of 90's. It can be concluded that (6)MM was conceived in 1945, born in 1960's and slowly nurtured in 1970's and finally entered in the real world in 1980's with its rapid growth in 1985, culminating in a fully established field during 1990's. See table 1 for details.

Table No.1

MULTIMEDIA DEVELOPMENT

Memex devised by Vannevar Bush	1945
Hypertext devised by Ted Nelson	1965
Architecture Machine Group by N Negroponte	1967
Hypertext editing system by Ted Nelso and Andy Van Dam	1967
NLS system by Doug Englebert	1968
Augumentation of HR in command and control through Multiple Media	
Man Machine Interaction by AMG	1976
MIT Media Laboratory	1978
ASPEN Project by Andy Lippman	1978
Electronic book by Dave Backer	1980-83
Filevision for the Macintosh	1984
Intermedia Fourth generation system by Brown University	1985
Symbolic Document Examiner by Janet Walker	1985
110 Different projects by MIT Media Lab after 1985	
Hypercard by Apple	1987

Creating/developing MM system

Any programming language, application software or compiler which has Application Programme Interface (API) along with Dynamic Link Library (DLL) and Object Oriented Linking System can be used to develop a MM system. Some of the known interface languages are C++, Word Basic, Word Perfect Macros, Windows, and Visual Basic. Creating a quality interactive MM system takes a lot of knowledge and the right tools. We must plan in hand how to present the information and how to manipulate the same in real time.

Hypermedia is the foundation of interactive Multimedia. The basic key concept in the design of a MM system is to start with the hypertext and hyperlinks.

To set up a hypertext system, we can use any compiler, programming language or Visual Basic. In setting up a hypertext we must decide the highlighted words and links which when selected

cause the system to display the text page that elaborates on or defines the highlighted word. Hypertext is the only one of several navigational tools we can provide in MM system.

Using Media Control Interface and Windows 3.1 we can add Sound i.e. Audio files like WAV files and MIDI files Video playback, Pixels, images etc

The Graphic Device Interface helps to add the features like graphs pixels etc. If the system has SVGA then it is highly useful to represent these media for information presentation.

With the Animation Authoring tool such as Autodesk's Pro we can add animation interface to the MM system.

Video for Windows (VFW) is the contribution of Microsoft to the world of Digital video enables to digitize and play video clips captured from conventional analog video sources such as VCR's Laserdisks, etc. VFW is based on a system called Audio Video Interface.

Thus Windows with a compiler or application software having API and DLL can turn ones favourite subject into dazzling extravaganza MM system.

Application of multimedia

As the technology has developed, the applications of MM have appeared in many areas. The general use of having a MM systems are :

1. Freedom to the user according to one's choice
2. It is an aid to teaching and learning in any area of study as it has different options for presenting a concept or the theme of study.
3. Allows to create, edit, and retrieve and store structured information.
4. Allows to view the information on the monitor
5. Allows the user to have 3-D view of an object.
6. Allows non-linear and consequential access to the MM system.
7. The links allow to the user to go from one single point to any desired place or fragment of text in the system.
8. It can be single stand alone system or multi user system.
9. The MM system are highly useful in developing the research oriented materials and courseware.

There is virtually unlimited amount of application

that it can be used in business, manufacturing technology, geographic information, advertisement, games, home shopping, virtual reality presentation and more.⁷

Ted Nelson claims that some day soon all information, magazines, articles, books, newspapers, scientific papers, stock quotes, net work news, movies, music every thing will be available as multimedia. This information will also be available on line through satellite from personal computer if all these stuff is converted into electronic form.

Problems facing Multimedia”

Although we have great benefits their incorporation into the work place is a difficult task. The problem faced are

1. Personnel i.e. lack of trained people and lack of necessary skills.
2. Technology i.e. lack of software to integrate, control, coordinate, manage and adopt the various media for human computer interface.
3. Lack of support software for facilitating the authoring, composing and production of MM document.
4. Lack of search and pattern recognition capability for locating information that are interest in MM storage facilities.
5. Lack of standardization

Conclusion

MM is a new IT product and is new thrust area for the professionals to develop user friendly MM systems. Computer is the primary tool used in the MM system. MM has changed the way of

information gathering, repackaging and distributing to fellow professionals with its sound and visual capabilities. The technologists are trying to overcome the problems and are working progressively for different applications. Certainly MM will occupy a place in the information centers as a modern tool in the 21st century.

In India, NIC, Delhi : C-DAC, Pune: NCERT, Delhi are working in this direction and there are 5-6 vendors who supply the MM hardware. Therefore, it is essential that as we move into the coming decade we will have range of IT products and we must get our selves trained to use these and sustain our profession among ourselves.

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